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The Moving Image

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THE MOVING IMAGE

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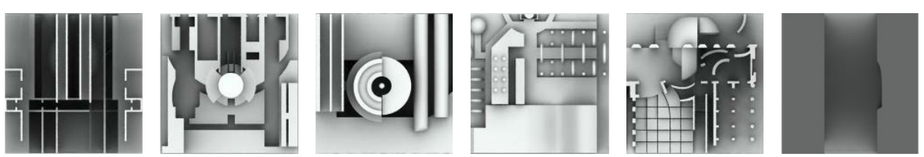


INTRODUCTION

methodology of architectural representation

Form in architecture has become synonymous with geometries as opposed to the philosophical Aristotelian notion of form. This thesis rests on two beliefs: *space* and *form* are co-present, as space without form is nothing and likewise *form* without *space* leaves no room to materialize itself. An *object* results when *space* and *form* are co-present; architecture as an object then subsequently reveals itself when a third element of *human movement* is introduced.

This thesis contends that if architecture is perceived through the introduction of *human movement*, then it is peculiar that architectural representation has historically been represented through means of *static images*. Through what is delineated as the *moving image*, this thesis explores a new mode of architectural representation that utilizes the dynamism of movement as a method of design for architectural form.

1 **OBJECT** is SPACE + FORM

Prior to exploring the *moving image*, an expository exploration regarding how the thesis' emphasis on the importance of *movement* in architecture came to be. It is critical to reiterate that *space* and *form* must be coexistent rather than independently present at the same time; as is the contention of this thesis, *object* is the coexistence of *space* and *form*. What differentiates between *object* and *form* is nothing, yet in the same sentence it should be reiterated that *form* precedes *object*. This seems paradoxical but the foundation that this thesis relies on is the statement: "*object* is [*space* + *form*]. The *object* can only be realized if space is present to define *form*, and *form* is present to define *space*.

In “Dynamics of Architectural Form”, Rudolf Arnheim states that *space* is defined through two means: the physical and the psychological. Physically, space is defined by the “extension of material bodies or fields bordering each other” whereas the psychological method of *space* has mutual influences of tangible things that determines the spaces in between (Arnheim, 10). Arnheim’s statement of “material bodies or fields” and “tangible things that determines the spaces in between” is by definition, *form*. Arnheim’s model of *space* is set so that perceiving *space* is only possible because of *form* making *space* perceivable; likewise, *form* is also only perceivable when there is *space* for which *form* can reside in.

For example, Arnheim uses outer-space in further outlining the perception of *form* and *space*. In outer space, the relationship between an astronaut, a spaceship and the earth creates a flat 2-dimensional plane between the 3 separate forms (figure 1). Whether this 2-dimensional plane is oriented horizontally or vertically, or tilted obliquely, has no meaning. If these three forms, however, were in relationship to an exterior frame, that 2-dimensional triangular relationship is broken and becomes related to the frame the points reside in (figure 2). When a fourth point is introduced but has a relatively ‘weak’ strength compared to the other three, such as a small asteroid, then the 2-dimensional plane isn’t disturbed. If the fourth point has a strong presence, then a new 3 dimensional relationship is created. Likewise, this perceptual relationship between these points is only possible because of *space*, as *space* is ultimately what is bound by *form* as much as the *form* is bound by its *space*.

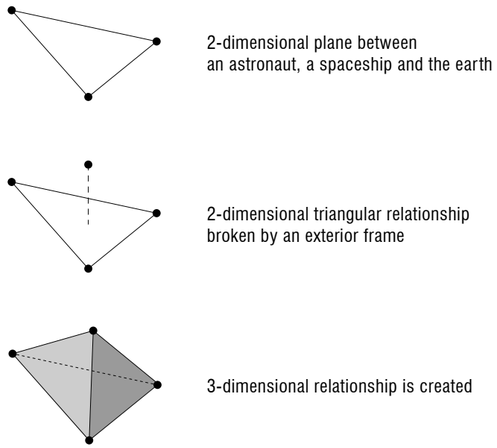


Figure 1. The formation of *space* through the arrangement of multiple *forms*

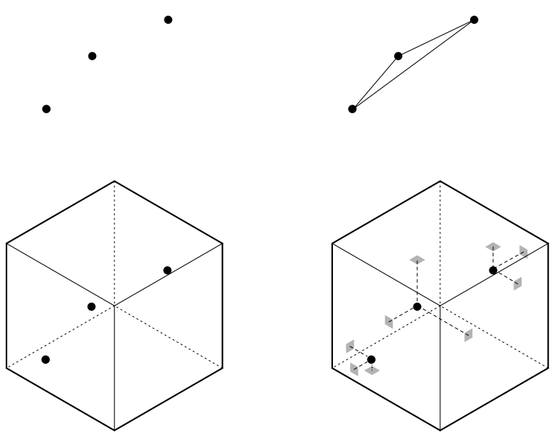


Figure 2. *Space* bound by the *form*

Figure 1&2. *Arnheim, Rudolf. The Dynamics of Architectural Form [Berkeley and Los Angeles, CA: University of California Press, 1977]: 12-13*

The coexistent nature of *space* and *form* makes it so that the *object*'s relationship in a single area informs the geometric shapes of the region *space* and *form* occupy. Just as *space* can be defined by the constraints of *form*, a *form* can emerge through simple shifts in negative-space. This interconnection (figure 3) is highlighted by the copresence of *space* and *form* and is thus able to reinforce their contiguous relationship. Likewise, the perceptual understanding of something as iconic as a cityline intuitively creates the understanding that the bottom highlighted geometry is the city, and everything above is the sky (figure 4). When the cityline is rotated, the once iconic imagery is distorted and a new relationship between *form* and *space* emerges.

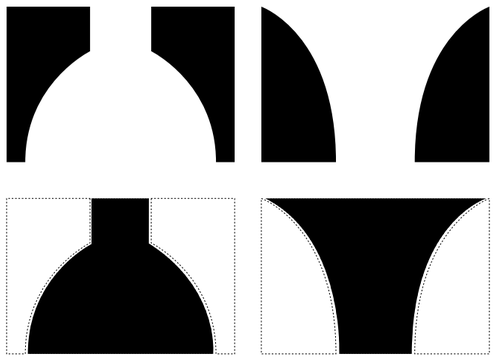


Figure 3. Geometric shifts through the interconnection of *space* and *form*

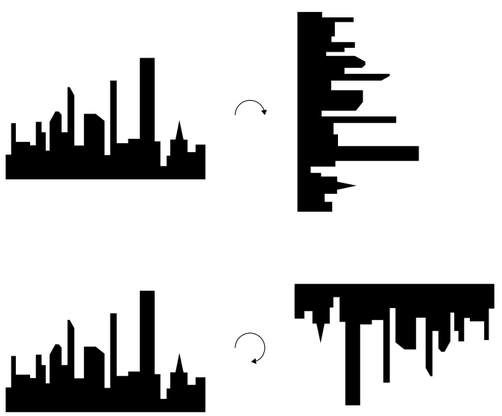


Figure 4. Distorting visual perception of a cityline

Figure 3. *Arnheim, Rudolf. The Dynamics of Architectural Form [Berkeley and Los Angeles, CA: University of California Press, 1977]: 21*

Figure 4. *Arnheim, Rudolf. The Dynamics of Architectural Form [Berkeley and Los Angeles, CA: University of California Press, 1977]: 27*

According to Christian Norberg-Schulz, the horizontal directions (figure 5) represent the concrete world of action for humans. Assuming a single *form* in *space*, the central axis of the *form* tends to arrange itself so that on a horizontal plane all directions are equivalent. This implies that *space* is perceived equal in all directions because of *form* being able to define *space*, and thus results in the perception of an infinitely expanding *space*. Within this plane of infinite *space*, a single *form* or a series of *forms* residing on this infinite plane of *space* only furthers the corelationship between *space* and *form*. If *form* were to be non-existent, the *space* would be unperceivable, resulting in nothing.

Arnheim states that this interrelationship between *form* and *space* happens between buildings all the time. Perceiving *space* can be observed though the distance of the gap between two buildings, but its absolute level of intensity may depend on other perceptual factors, such as the size of the buildings. The gaps between the buildings will influence the *space* that is experienced. Interspace n will look smaller and denser when compared with o; it will look larger and looser when compared with m (figure 6).

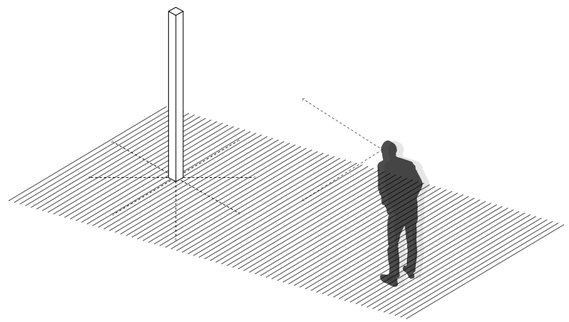


Figure 5. Orientation of *forms* resulting from human interaction

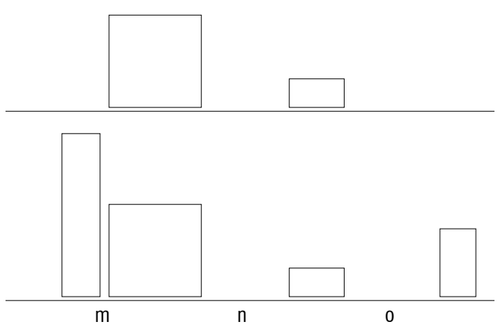


Figure 6. Interrelationship between spatial observation and spatial experience

Figure 5. *Arnheim, Rudolf. The Dynamics of Architectural Form [Berkeley and Los Angeles, CA: University of California Press, 1977]: 36*

Figure 6. *Arnheim, Rudolf. The Dynamics of Architectural Form [Berkeley and Los Angeles, CA: University of California Press, 1977]: 19*

2 THE STATIC IMAGE

the lack of movement in architectural representation

Because human movement is an integral part of what this thesis defines as architecture, the question is how to not only visually represent a moving phenomenon, but also as a means of architectural design. Perspective in architectural representation has been primarily used as a technique to represent the human perspective. A pictorial rendering that places the viewer in an orthogonal position to the entrance of the building may not inform the viewer much about the building as a three-dimensional whole; however, it may provide visual conformity between the framework of the architecture and that of the viewer.

Derived from “Perspective as Symbolic Form”, Panofsky explores the modern idea of ‘linear perspectival construction’ using elevation and plan to create a visual pyramid (figure 7). The apex of this pyramid is the location all other points connect to create *space* that is represented. These spaces create “visual rays” (figure 8) and derive what Albrecht Dürer calls a “planar, transparent intersection of all those rays that fall from the eye onto the object it sees” (Panofsky, 60). Panofsky questions this traditional notion of perspective as a few assumptions must be made. The perspective makes the assumption that all orthogonal lines must always reach a central vanishing point constructed by the ‘visual rays’ and thereby making an equal assumption that whatever *objects* present must all have an equal vanishing point. Because the perspective is constructed in a manner that all preceding *objects* in *space* diminish proportionally and equivalently, the location of the eye must be known, therefore creating a biased perspective unique to that singular location.

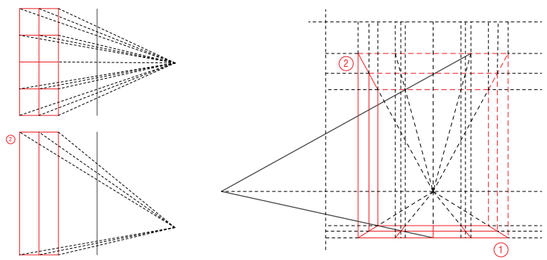


Figure 7. Erwin Panofsky’s “Visual Pyramid”

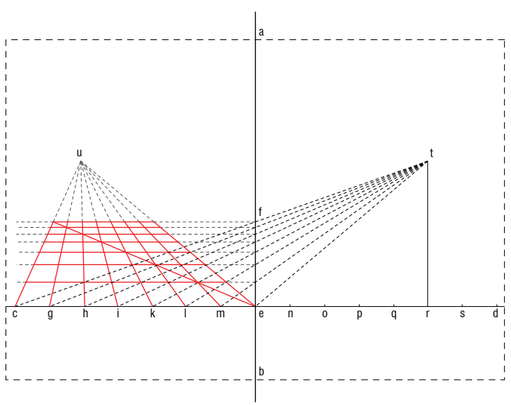


Figure 8. Albert Dürer’s “Visual Rays”

Figure 7. *Panofsky, Erwin. Perspective as Symbolic Form [New York: Zone Books, 1991]: 60*

Figure 8. *Panofsky, Erwin. Perspective as Symbolic Form [New York: Zone Books, 1991]: 64*

In the introductory essay to “Perspective as Symbolic Form”, Christopher S. Wood writes that “[Panofsky’s] prime object-lesson is fifteenth-century perspective. For even here, where painting is sometimes indistinguishable from science, there is simply no stable criterion by which the accuracy of the representational model can be evaluated. Linear perspective is just another artistic expression” (Panofsky 13). Panofsky argues that certain works of art that are considered to have ‘wrong’ perspective in the ‘scientific sense’ is not because of the lack of knowledge of perspective but the deliberate artistic choice as a mode of expression (figure 9).

The conception of perspective sees beyond the immediately observed, and has the strange in-between of capturing reality, while also fabricating it at the same time, essentially proving its own Latin root, *perspectiva*; to ‘see through.’ To have a rational sense of *space* through perspectival representation, the perspective must make the assumption that we have an unmoving eye while likewise making an equal assumption that the ‘visual pyramid’ can fully grasp the true subjective optical impression. Because of the aforementioned importance of *human movement* in architecture, the attempted replication of the human experience through static perspectival representations of architecture creates the inevitable and unavoidable inquiry that there is a lack of *human movement* in architectural representation. While the question is again reiterated in how *movement* can be translated into architectural representation, the question is quite rhetorical; cinema as a medium, a century year-old mode of representation philosophy revolves around capturing *movement*.

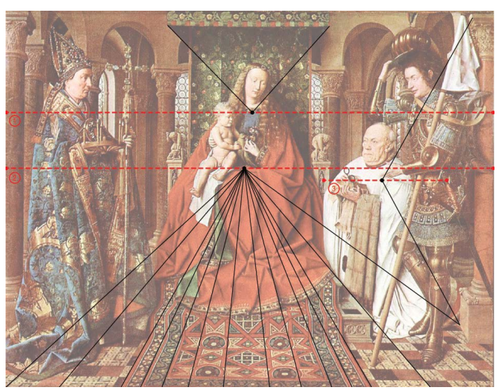


Figure 9. Perspective study of Jan Van Eyck’s “The Virgin and Child with Canon van der Paele”

Figure 9. *Panofsky, Erwin. Perspective as Symbolic Form [New York: Zone Books, 1991]: 64*

In response to Sergei Eisenstein's analysis of Auguste Choisy in "Montage and Architecture", Yve-Alain Bois highlights Choisy's processional drawings of the Acropolis of Athens and its attempt to visualize a moving subject through static perspectival representations (figure 10). However, "if the spectator cannot move, he has to gather in one unique point the elements of which that is dispersed in reality, unseizable to a single gaze, scattered about, but which the author must absolutely juxtapose, for it is in taking in all these elements that the spectator will obtain an impression of the object or - moreover - the impression the author wishes to induce in transforming the relationships of reality, that which he wants to inscribe for the perception" (Eisenstein, 111).

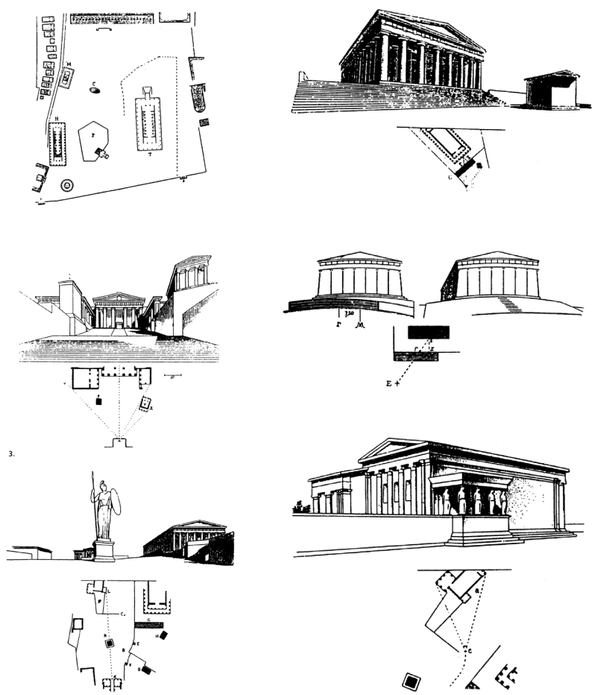


Figure 10. Choisy's movement diagram through the Acropolis

Figure 10. *Eisenstein, Sergei M., Yve-Alain Bois, and Michael Glenny. "Montage and Architecture." Assemblage, no. 10 (1989): 117-119*

Eisenstein had a particular interest in ‘sequentiality and montage’ of architecture and its structure of perception. Bois writes that Eisenstein’s observation of Choisy highlights the aesthetic motivation of apparent disorder in the placement of buildings on the Acropolis and the variety of perspectives shown to human perception. To Choisy, graphic representation of the cinematic perception of architecture is best highlighted in the axonometric as “in this system, a single image, agitated [*mouvementee*] and animated like the building itself, replaces the abstract figuration fractioned in plan, section and elevation (figure 11). The reader has in front of his eyes simultaneously, the ground plan, the exterior of the building, it section and its interior disposition” (Eisenstein, 114). The axonometric is parallel to the storyboard of cinema as it has no bias to a particular point of view and serves to create the larger cinematic reading as a whole. We argue that Choisy’s statement that the axonometric as a means of representing *movement* in architecture as an incorrect assessment because of this thesis’ claim that *movement* is a result of *human movement.*

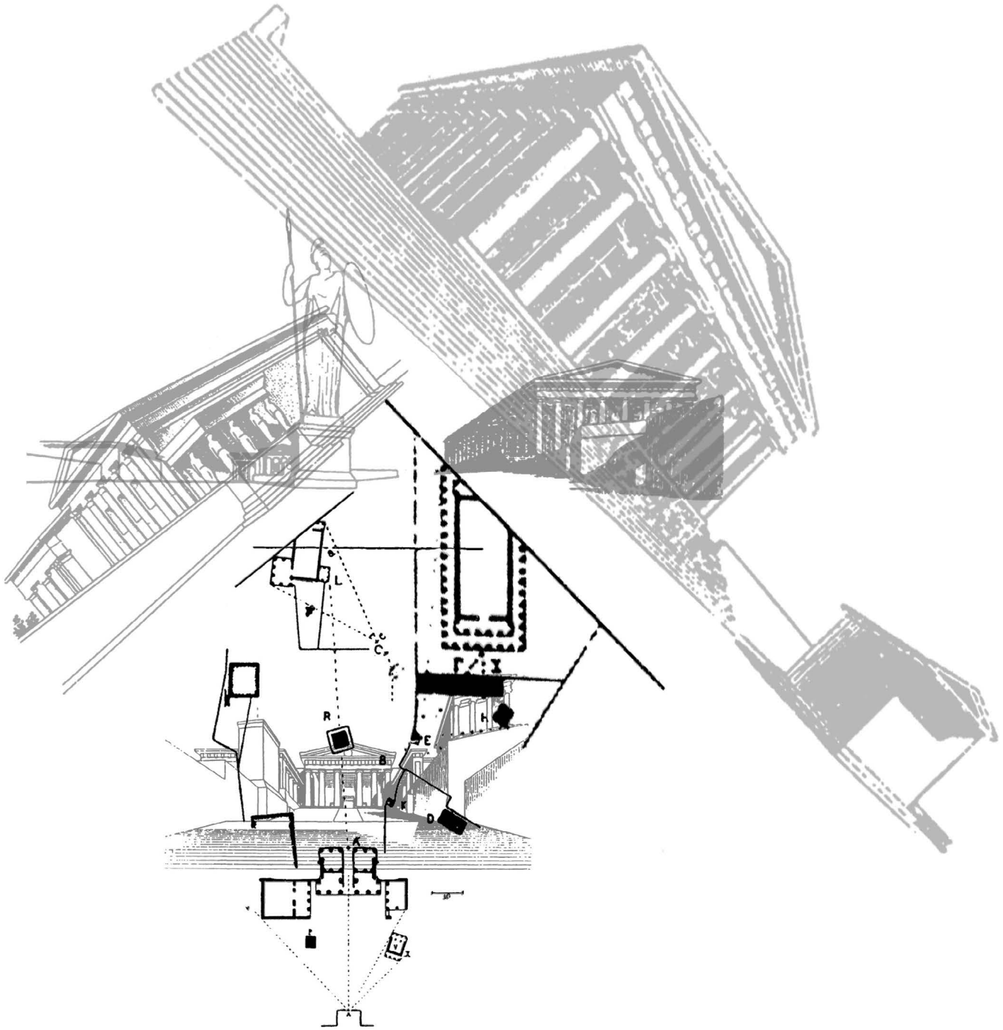


Figure 11. Collage of Choisy’s drawings; limitation to static representation with regard to spatial understanding

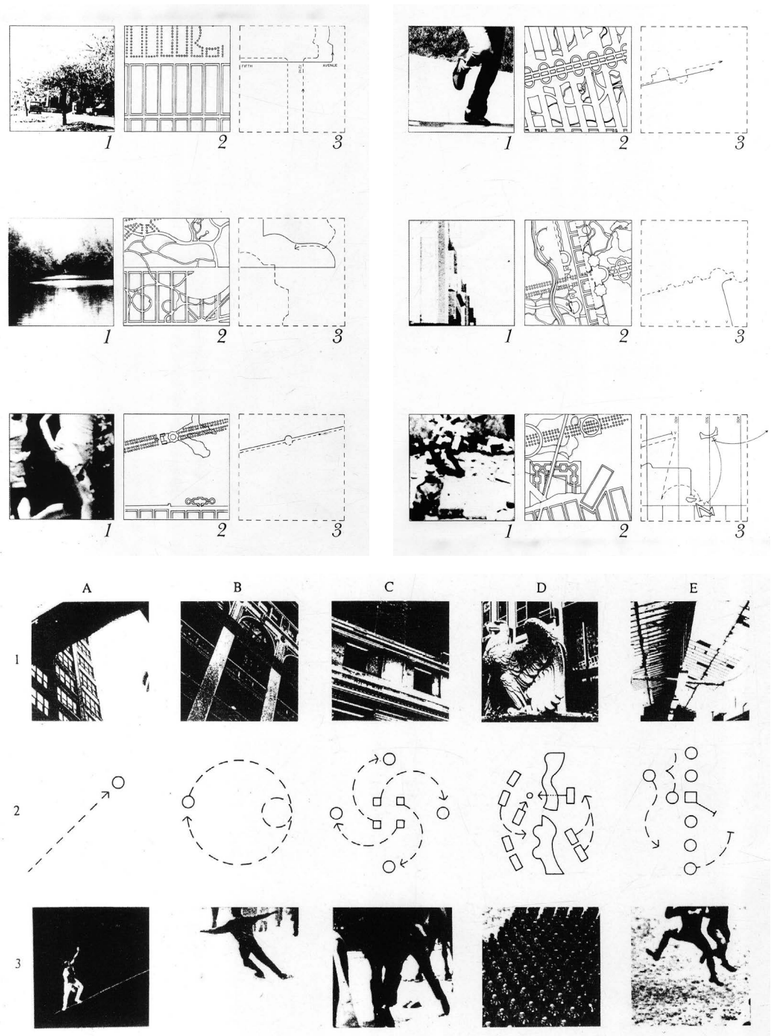
If Choisy's substitution of the axonometric's equivalent to cinema's storyboard is to hold true, Choisy would be arguing that the cinema storyboard too is a representation of *movement*. This thesis argues that the cinema storyboard serves more as the *static* compositional framework of what is to later be filmed; i.e *moved*. There is no equivalent of *moving* the *static* compositional framework in architectural representation. Because Choisy argues that the axonometric style of architectural representation is that of a cinematic storyboard, then the same way cinema *moves* the storyboard to create cinematography, architecture needs an equivalent to evoke *movement*. The more apt comparison of the axonometric is a representation of *object* not *movement*. The *movement* should always be in reference to *human movement*, as *human movement's* experience and interaction with *object* is what creates architecture.

choisy = [axon = storyboard = movement]

thesis = [axon = storyboard ≠ movement]

"The Manhattan Transcripts" by Bernard Tschumi, is the primary architectural precedent that this thesis would like to contend against in furthering the exploration of the *moving image*. In "The Manhattan Transcripts", Tschumi uses the 'tripartite mode of notation': movement, event, and space. Using this mode of notation, Tschumi states that it is "proceeded from a need to question the modes of representation generally used by architects: plans, sections, axonometrics, perspectives" (Tschumi, 9). To Tschumi, this general mode of representation deployed by architects are "caught in a sort of prison-house of architectural language, where 'the limits of my language are the limits of my world.' Any attempt to go beyond such limits, to offer another reading of architecture demanded the questioning of these considerations" (Tschumi, 9).

Through what Tschumi classified as 'stage sets', he created a set of architectural drawings with the "explicit purpose to transcribe things normally removed from conventional architectural representation, namely complex relationship between spaces and their use; between the set and the script; between 'type' and 'program'; between objects and events" (Tschumi, 7). In doing so, Tschumi aims to take movement, event, and space and make them independent so that they can be "broken down and rebuilt along different axes" (Tschumi, 7). Tschumi's fascination of the element of *movement* within architectural space is what intrigues this thesis to contend with "The Manhattan Transcripts", and ultimately Tschumi's definitions of *movement* and *space* in architectural representation.



Tschumi, Bernard. Manhattan Transcripts [Academy Editions, 1994]: 16-17, 46

3

THE MOVING IMAGE

the abundance of movement
in contemporary cinematic representation

Cinematic representation is innately architectural, however, inversely, architectural representation is not innately cinematic. Why is this the case? Simply put, the historic use of plan, section, and perspective in architectural representation is *static*. Cinematic representation will always have an architectural element because of its representation of *movement* and *object*, two components that this thesis deems integral to making architecture. Historically, architectural representation does not hold the same philosophy, insofar that its primary purpose is to represent the *object* in architecture and not *movement*. While architecture exists through movement, plans, sections, and perspectives simply cannot possibly represent this condition in the *static image*. What these highlight is the *object*, an equally invaluable tool to represent architecture, but consequently absent of a vital component.

In 1886, Eadweard Muybridge created the series “Horse in Motion”, where he captured a series of still images of horse locomotion for scientific muscle analysis (figure 12). In doing so, Muybridge created the first documented capture of movement that can be represented back to an audience. If Muybridge developed “Horse in Motion” with the philosophy that the intricacies of movement warranted a new mode of visualization, then why is architecture, a medium that we have previously stated is the culmination of *object* and *human movement*, stuck in representing architecture through *static images*?

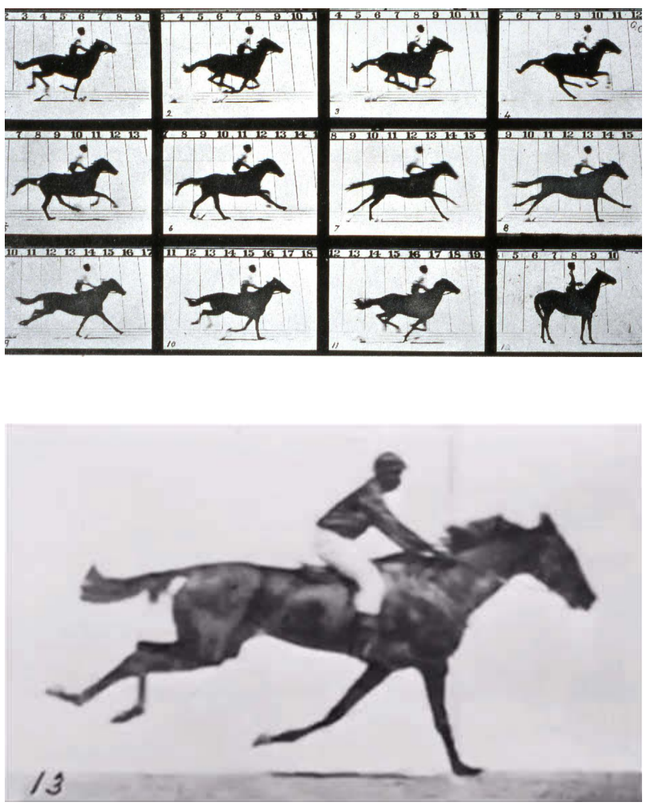


Figure 12. Eadweard Muybridge’s “Horse in Motion”

Figure 12. *Muybridge, Eadweard. Horse in Motion. ca. 1886*

By using Bernard Tschumi's "The Manhattan Transcripts" as a base of exploration and experimentation, we are able to explore the idea of movement in architecture through means not represented in Tschumi's original documents. One of the core issues that we contend against Tschumi is how he visually articulates *movement*. Tschumi's use of an imaginary character traversing through 'stage sets', and the subsequent diagramming and mapping of this character movement helps Tschumi create a methodology to his representation and architectural form making. With this methodology, Tschumi visually represents the 'stage sets' and *movement* through plans, sections, axonometrics and perspectives. This thesis questions, however, if simply representing character movement through a series of static images is able to genuinely capture the dynamism of *human movement.*

"MT2" of "The Manhattan Transcripts" is visualized through individual 'buildings' on 42nd St. of Manhattan, each being comprised of a plan, section, and base image (figure 13). As each 'building' is set next to each other, a dotted line starts from the furthermost left building and continues its way to the last building on the right. This line aims to serve as the 'character' moving through 'stage sets.' We are drawn toward this chapter of "The Manhattan Transcripts" because of its use of plan and section while giving an indicator of *human movement* in the form of a dotted line. What is problematic with this methodology is the fact that despite indicating where and how a 'character' is moving through space, a *static image* simply cannot translate the intricate nuances of *human movement*.

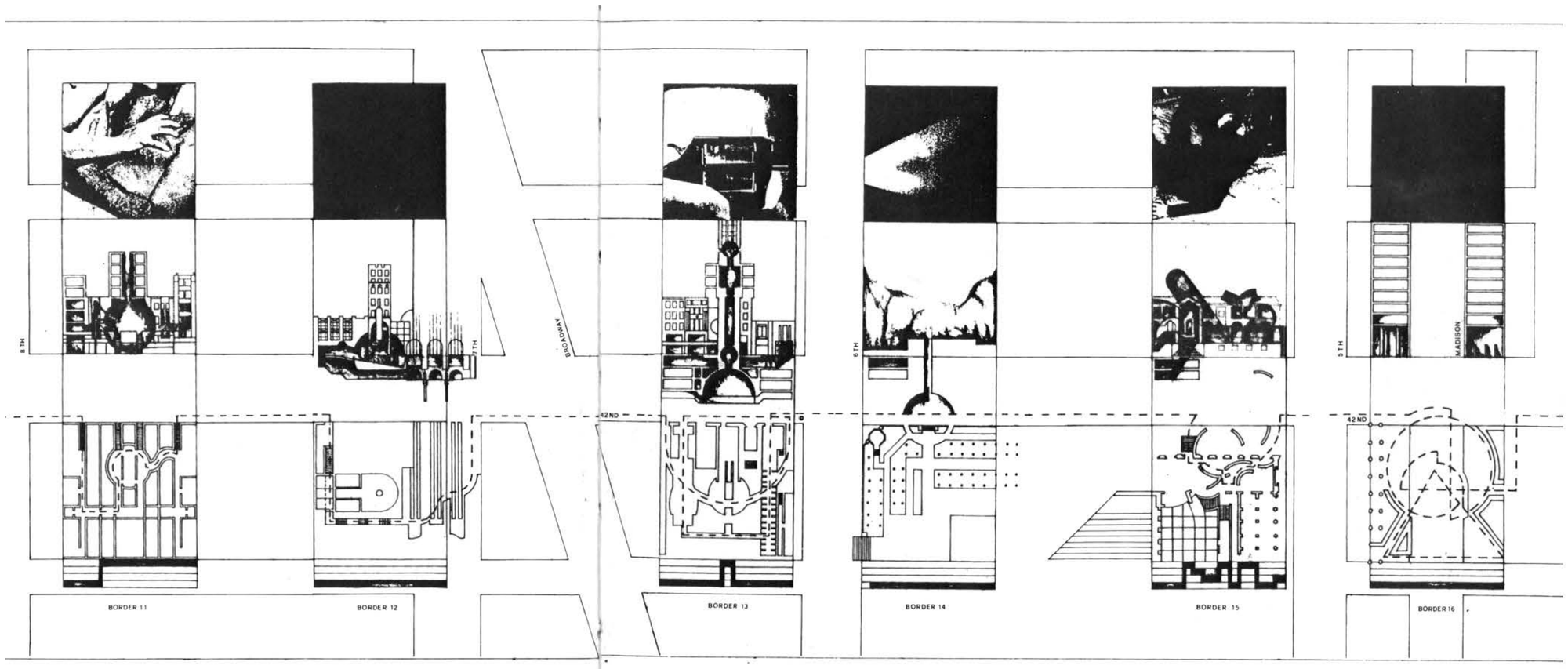


Figure 13. *Tschumi, Bernard. Manhattan Transcripts [Academy Editions, 1994]: 28-29*

As a means of experimentation, we took six buildings of “MT2” and used their respective plans and sections to create the buildings in three-dimensions (figure 14). While the three-dimensional forms we generated are speculative at best, the intent, however, is to recreate Tschumi’s drawing set by incorporating video as a means of visualizing *movement*. By using and following the exact character path drawn by Tschumi, we create a set of three videos, each representing plan, section and perspective using a tracking shot, something that is commonly used in contemporary filmmaking (figure 19, 20, 21).

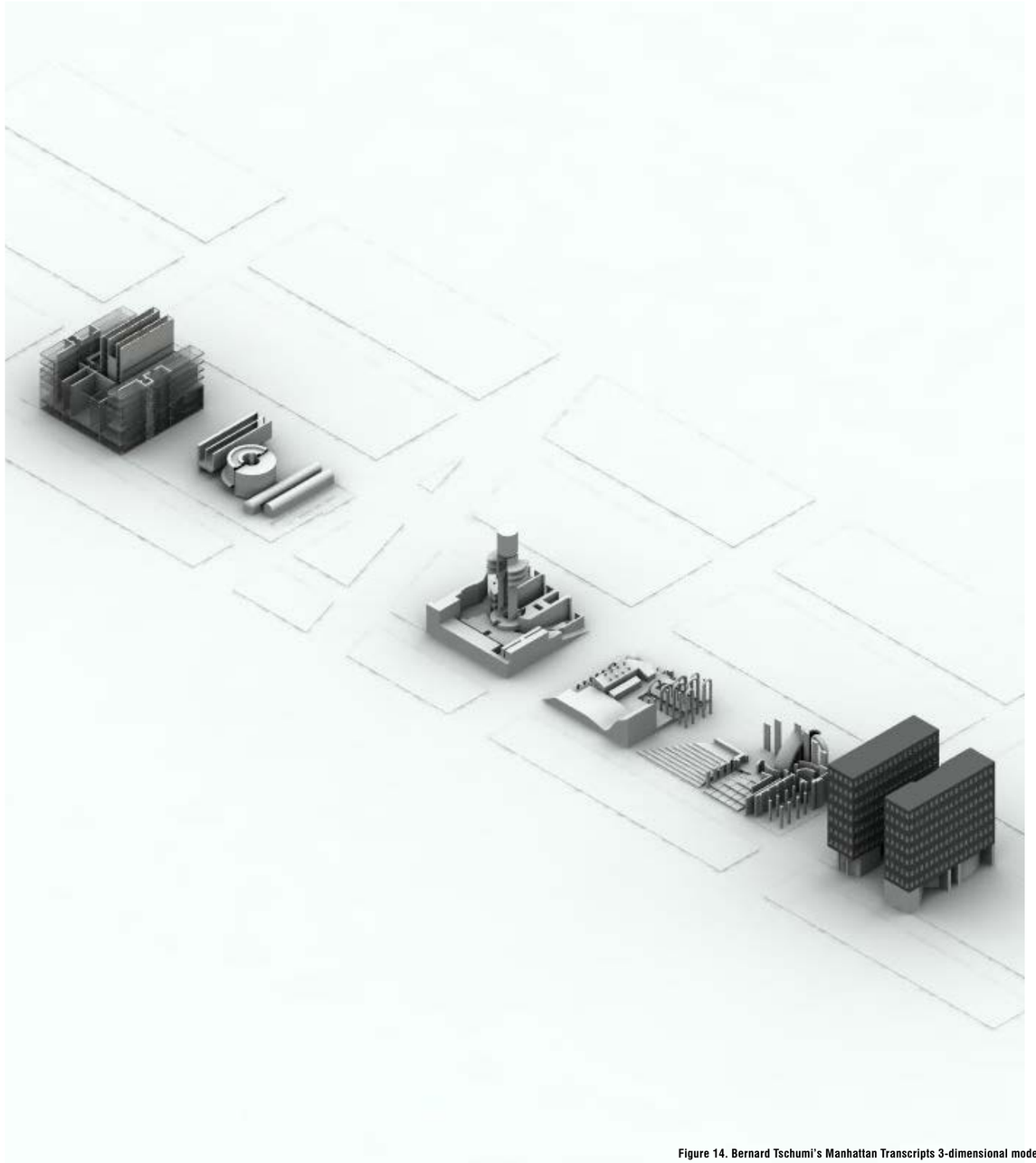


Figure 14. Bernard Tschumi’s Manhattan Transcripts 3-dimensional model

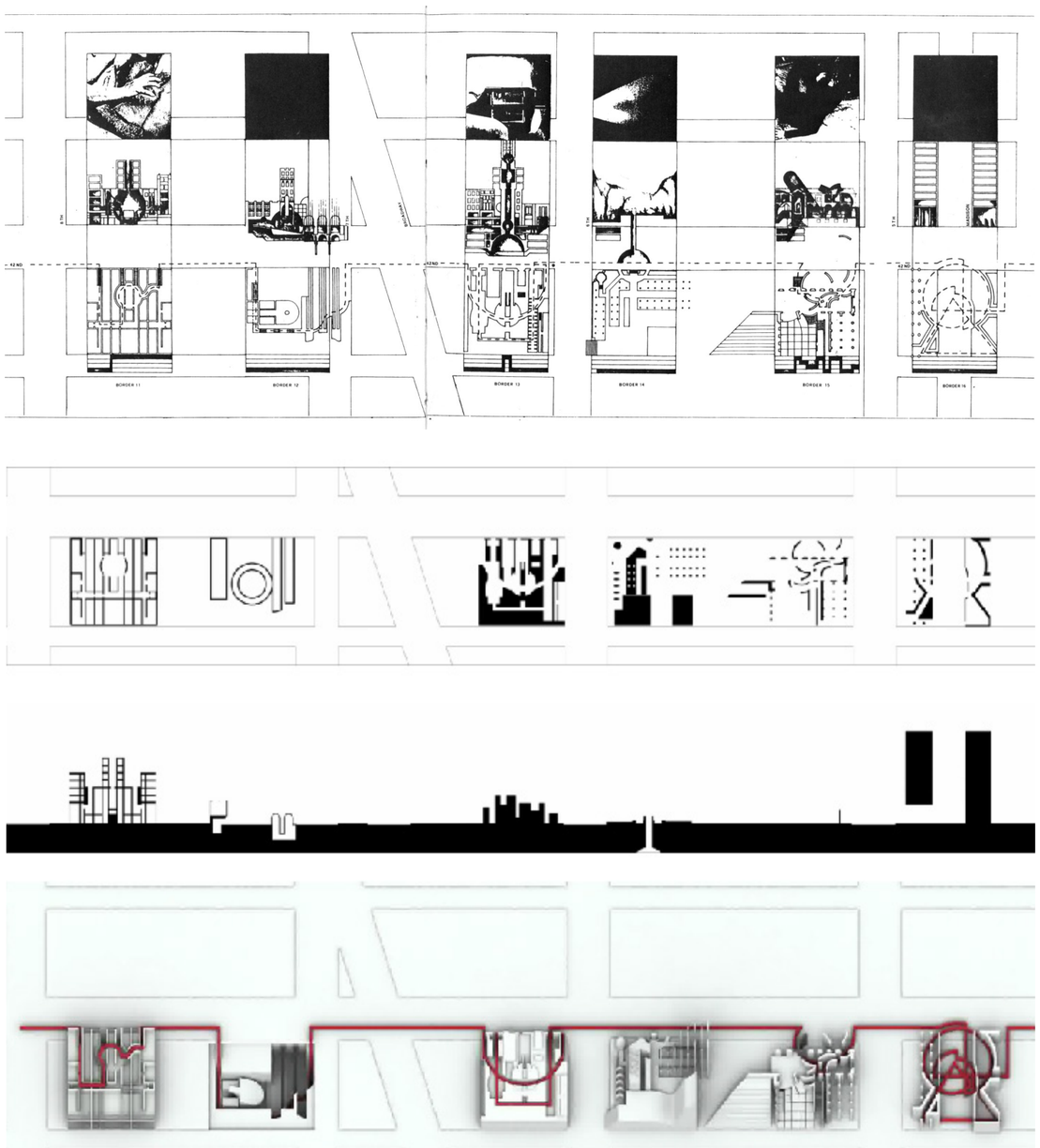


Figure 15. Progressive Plan
Self. Two-dimensional representation exploration of the Manhattan Transcripts

Figure 16. Progressive Section
Self. Two-dimensional representation exploration of the Manhattan Transcripts

Figure 17. Axonometric of Manhattan Transcripts
Self. Three-dimensional representation exploration of the Manhattan Transcripts

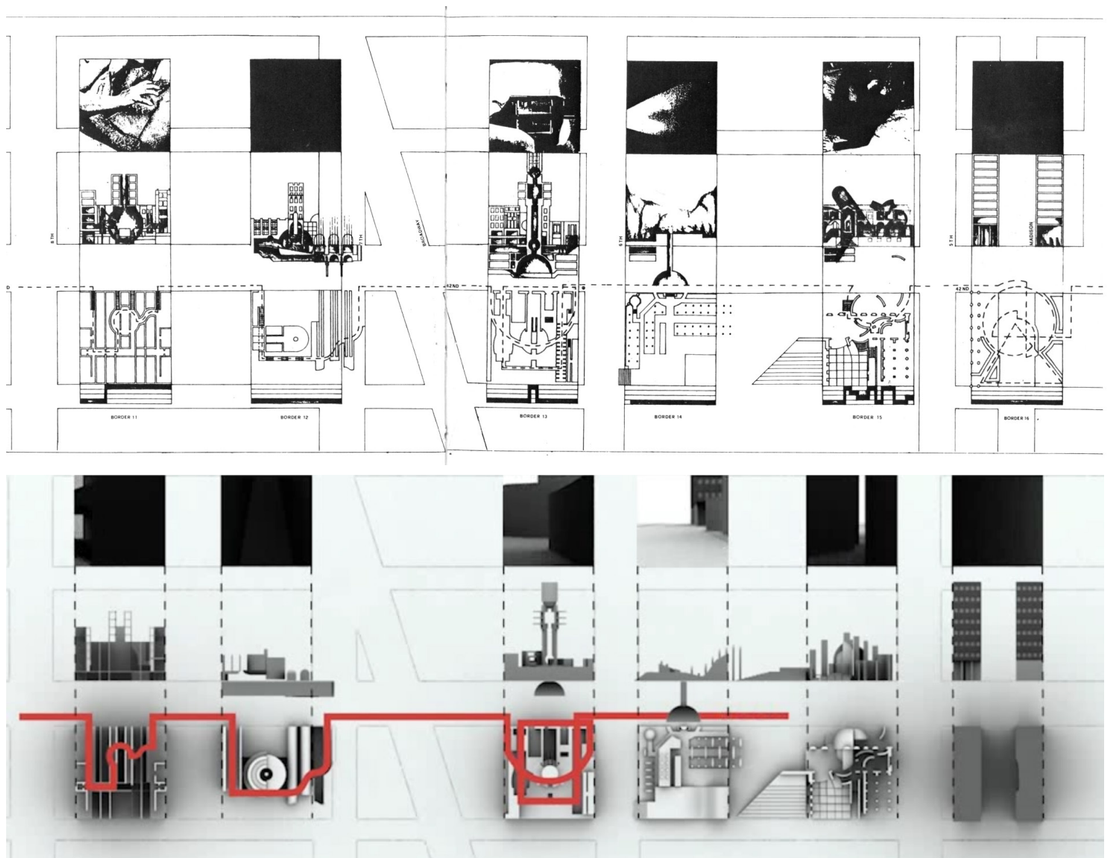


Figure 18. Formal Exploration of Manhattan Transcripts
Self. Three-dimensional representation exploration of the Manhattan Transcripts

Figure 19. Formal Exploration of Manhattan Transcript in Plan
Self. Moving Plan, Representational exploration of the Manhattan Transcripts

Figure 20. Formal Exploration of Manhattan Transcript in Section
Self. Moving Section, Representational exploration of the Manhattan Transcripts

Figure 21. Formal Exploration of Manhattan Transcript in Perspective
Self. Moving perspective, Representational exploration of the Manhattan Transcripts

The desire to capture *space* and *movement* is evident in Panofsky's perspective exploration and Choisy's progressional perspectives of the Acropolis. If the one point perspective is a stationary representational response to observing the human cognition and visualized as a singular 'frame', then the concept of the progressional perspective can be an extension of the stationary perspective by attempting to expand and infer greater information of the surrounding space by having a series of singular 'frames'. Likewise, this would make Muybridge's "Horse in Motion" an extension of the progressional perspective by visualizing a series of 'frames' into one 'frame', effectively adding movement to the image (figure 22).

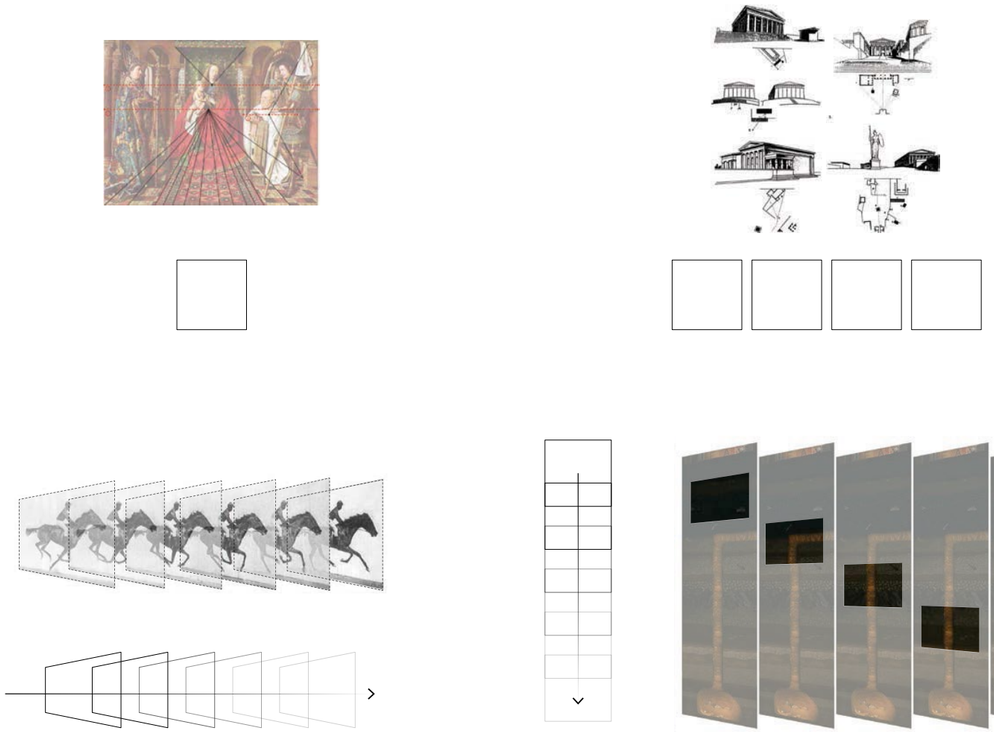
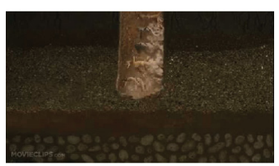


Figure 22. Comparison of Panofsky, Choisy, Muybridge, and Contemporary Cinema's use of 'frames'

While Tschumi embraced the effect of ‘cuts’ in cinematography when making “The Manhattan Transcripts”, this thesis believes that ‘cuts’ break the flow of camera movement, and as a result lose valuable context and spatial information. The ‘one-take shot’ in cinematography is a popular tool to extend a scene by having the camera track a subject and never make a ‘cut’ (figure 23). To analyze the one take shot, we categorized them into five different types of this technique: vertical tracking, horizontal tracking, dynamic tracking, one-point perspective, and dynamic perspective. Through analyzing these five uses of the one-take shot, we aim to highlight the four important components of information that we believe makes up a one-take shot: temporal shifts, scale, part-to-whole, and directionality.

Figure 23. Contemporary Cinema One-Take Tracking Shots



Anderson, Wes.
Fantastic Mr. Fox (2014)

VERTICAL TRACKING

Wes Anderson's "Fantastic Mr. Fox" is a film that uses vertical tracking to pan the camera through an elevation or section, giving the overall film an inherent sectional quality. Taking three scenes from the movie, we are then able to explore detailed nuances of each scene, such as the how the camera stops-and-gos depending on subject and context (figure 24), the textural quality of the poche' (figure 25), and the proportion of subject to frame (figure 26). The movie's static composition not only help to emphasize the movie's stop-motion animation, it furthermore accentuates the sectional quality of these three scenes. By pulling apart and restructuring both space and movement from the single 16:9 aspect ratio of the movie into a stitched section of the movie, we are able to see 'parts' that make up the 'whole' of the individual frame.

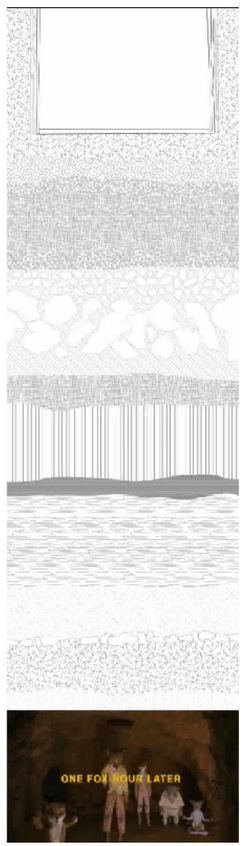
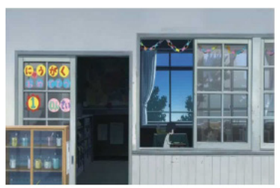
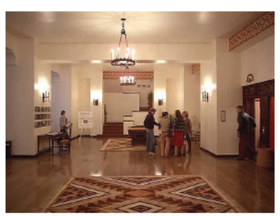


Figure 24, 25, 26. Vertical Tracking Analysis of Fantastic
Self. Fantastic Mr. Fox. Wes Anderson.
20th Century Fox, 2009. Film

HORIZONTAL TRACKING



Mamoru Hosoda.
Wolf Children (2012)

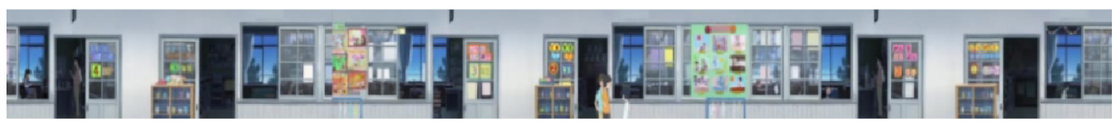


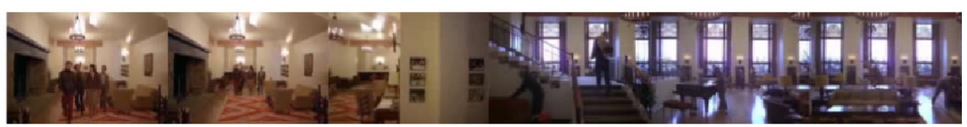
Stanley Kubrick.
The Shining (1980)

Park Chan Wook. Oldboy (2003)

Similar to 'vertical tracking', horizontal tracking has 'part-to-whole' elements; this can be seen most clearly in Mamoru Hosoda's "Wolf Children". This scene is a simple tracking back and forth of siblings Ame and Yuki as they grow up through elementary school and into middle school. In the movie it appears as though the camera is tracking back and forth between the Ame and Yuki's classrooms. By genuinely tracking the camera movement of the scene, the space that is occupied within the animation becomes much larger than it appears to be, creating what can be visualized as a long and seamless hallway (figure 27).

A similar effect can be achieved in a single long take in one direction as shown in Stanley Kubrick's "The Shining". Temporally offsetting the frame of the movie and stitching them back to back, in a strange way, creates a similar 'long and seamless hallway' effect that was created with "Wolf Children" (figure 28). While the effect generated with "The Shining" is a fabricated effect, as opposed to a direct translation like "Wolf Children", the reading of the space is elongated and uses a series of 'parts' to create a new reading of a 'whole'. Taking the same temporal offset but overlaying them on top of each other creates an entirely new effect. Park Chan-wook's "Oldboy" doesn't showcase a uniform single direction like "The Shining", and as a result, the overlay muddies the image and blurs line between character and setting. However, when the camera becomes steady in the original film, the temporal overlays equally begin to put the background setting into focus, creating a strange in-between of what is simultaneously legible as it is illegible (figure 29). By visualizing the temporal conditions of "Wolf Children", "The Shining", and "Oldboy", begin to question how *form* and *space* is interpreted through *movement*.





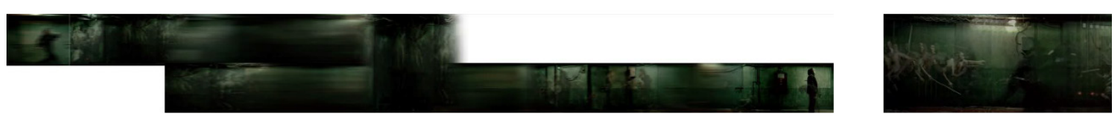
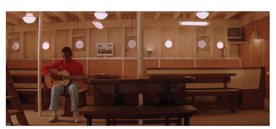


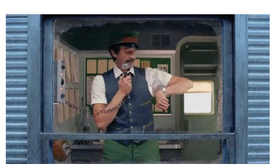
Figure 27. Horizontal Tracking Analysis
Self. Wolf Children Ame and Yuki. Mamoru Hosoda. Toho, 2012. Film

Figure 28. Horizontal Tracking Analysis
Self. The Shining. Stanley Kubrick. Warner Bros., 1980. Film

Figure 29. Horizontal Tracking Analysis
Self. Oldboy. Park Chan-wook. Show East, 2003. Film



Wes Anderson.
Life Aquatic with Steve Zissou (2004)



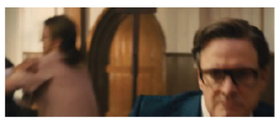
Wes Anderson.
"Come Together", H&M Advertisement (2016)

DYNAMIC TRACKING

Temporality in movies become more complex when more than a single subject is 'moving' at the same time out of frame. This effect becomes clear when viewing the way Wes Anderson constructs a one-take scene in "Life Aquatic with Steve Zissou" or the H&M advertisement "Come Together". In "Life Aquatic with Steve Zissou" and "Come Together", the setting of both scenes are of a ship and train. As both scenes are panning through the ship or train, the audience is introduced to a series of people interacting inside of said ship or train. It is easy to forget that people don't move one at a time on a ship or train; movement is never stopped. It is by nature of filming people in sequence that gives the movie a sense of direction. Once the scene is stitched back together, we are able to see all the people interacting inside of the setting simultaneously without pause (figure 30,31).

Figure 30. Dynamic Tracking Analysis
Self. The Life Aquatic With Steve Zissou. Wes Anderson. Buena Vista Pictures, 2004. Film

Figure 31. Dynamic Tracking Analysis
Self. Come Together. Wes Anderson. H&M, 2016. Film



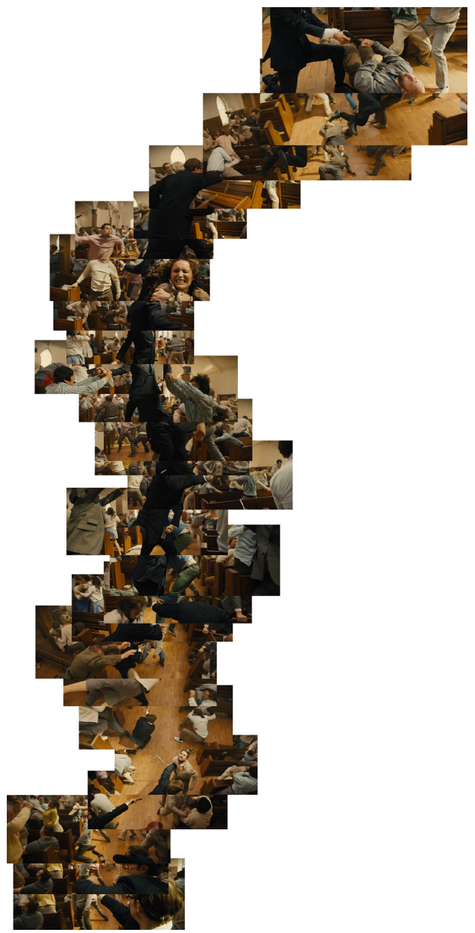
Matthew Vaughn.
Kingsman (2015)

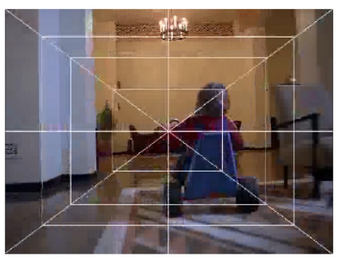
Stanley Kubrick.
The Shining (1980)

Stanley Kubrick. Full Metal Jacket (1987)

PERSPECTIVE

The use of one-point perspective in movies is a response to the original perspective explorations of Panofsky and Choisy. Unlike the static images of Panofsky and Choisy, movies are able to show the progression of *space* because it is a *moving image* (figure 32,33). This leads to the 'dynamic perspective' as a technique that follows the subject but adds more dynamic camera movements. What this effect achieves when stitched back together, as exampled by Matthew Vaughn's "Kingsman", is shifts in direction and scale, accentuating the creation of a trail of temporal images adjusting from one frame to the next (figure 34).





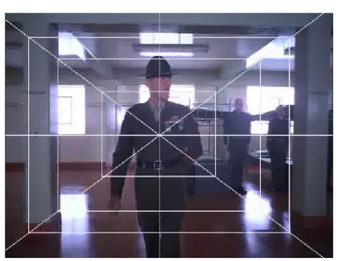


Figure 32. Dynamic Perspective Tracking Analysis
Self. Kingsman. Matthew Vaughn. 20th Century Fox, 2014. Film

Figure 33. One-point Perspective Tracking Analysis
Self. The Shining. Stanley Kubrick. Warner Bros., 1980. Film

Figure 34. One-point Perspective Tracking Analysis
Self. Full Metal Jacket. Stanley Kubrick. Warner Bros., 1987. Film

4 ARCHITECTURE AS **THE MOVING IMAGE**

Using the four components (temporal shifts, scale, part-to-whole, directionality) explored in the visual explorations and experimentations of contemporary cinema, we combined the plan and section videos generated from “The Manhattan Transcripts” to create a series of artifacts. Figures 35, 36, and 37 explore these visual studies in combining the elements learned in the vertical, horizontal, and dynamic tracking explorations by using the “The Manhattan Transcripts” plan and section videos as a base. These artifacts are then combined to create a six by six square grid artifact that incorporates all the aforementioned elements back into a single frame, creating a plan and section evocative of movement derived from “The Manhattan Transcripts” (figure 38).

VERTICAL

HORIZONTAL

DYNAMIC

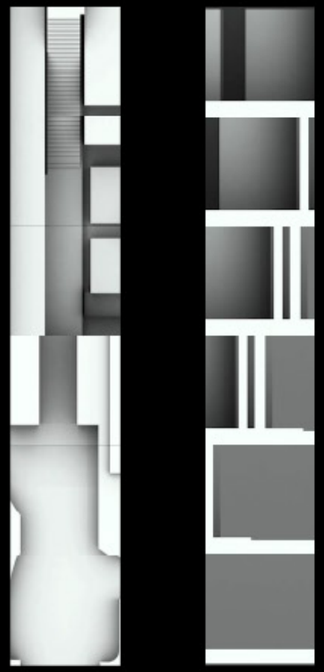
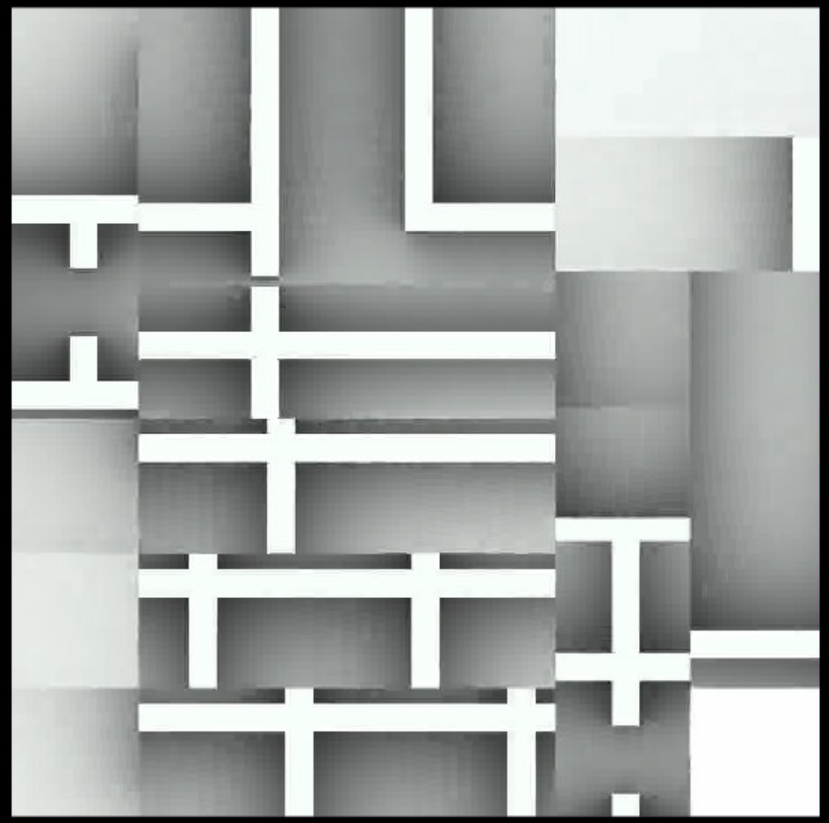


Figure 35. Vertical Tracking
Self. Moving Plan and Section Representational exploration of the Manhattan Transcripts using the movie analyses.

Figure 36. Horizontal Tracking
Self. Moving Plan and Section Representational exploration of the Manhattan Transcripts using the movie analyses.

Figure 37. Dynamic Tracking
Self. Moving Plan and Section Representational exploration of the Manhattan Transcripts using the movie analyses.

PLAN



SECTION

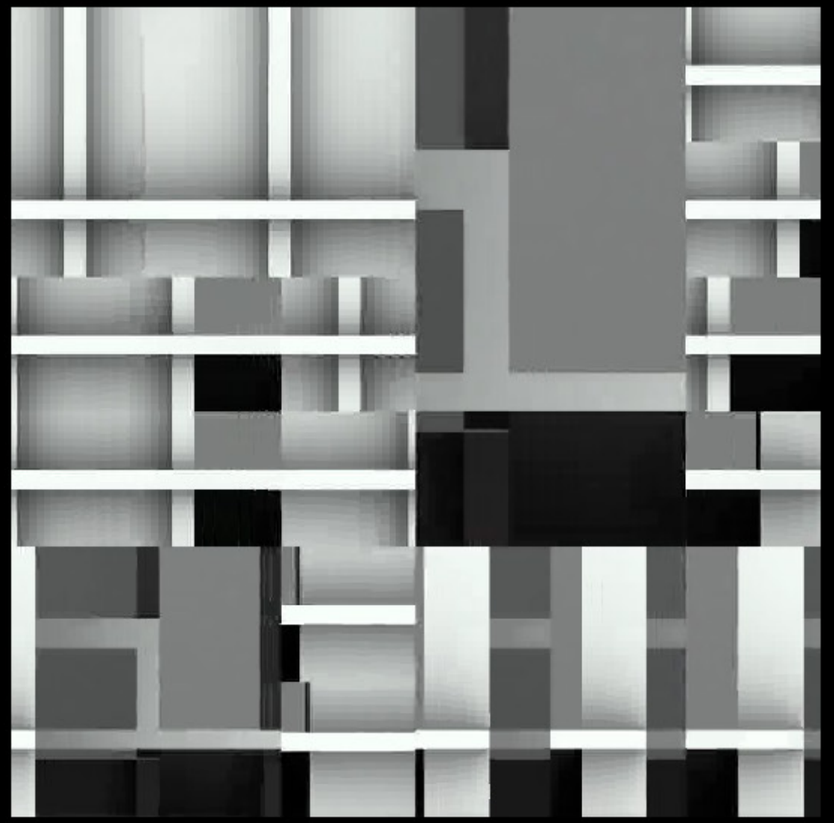


Figure 38. Plan and Section Artifacts
Self. Made by implementing elements of vertical, horizontal, and dynamic tracking to create a 6x6 artifact visualizing all three at the same time.

Just as a traditional building is generated through the use of plans and sections, these newly generated plan and section artifacts are then used as a base to generate *moving objects* represented in three dimensional form (figure 39). To integrate both the plan and section beyond the two dimensions, we interpret the poche' of the plan and section as the 'white' walls and intersect them through extrusion to create a singular three dimensional *moving object* (figure 40). The gray and black spaces were utilized for an object with inversive qualities (figure 41). Through the previously explored movie explorations, we are able to show the visualization of *movement* that extends past the singular frame of film. The video of the three dimensional *moving object* serves as a visual representation of *movement* and its interaction with *object*. Just as the copresence of *space* and *form* rely on each other, an *object* is constantly adapting to *movement*. Much like the movie explorations, a person's perspective of what is seen while moving through a building can be interpreted as a 'frame' of their perspective. This frame is constantly shifting and adapting to the *movement* of the person, which in turn constantly shifts the perception of the building *object*. The video of the three dimensional *moving object* serves as a visual representation of this constant *movement* and the object's ability to constantly adapt to *movement*.

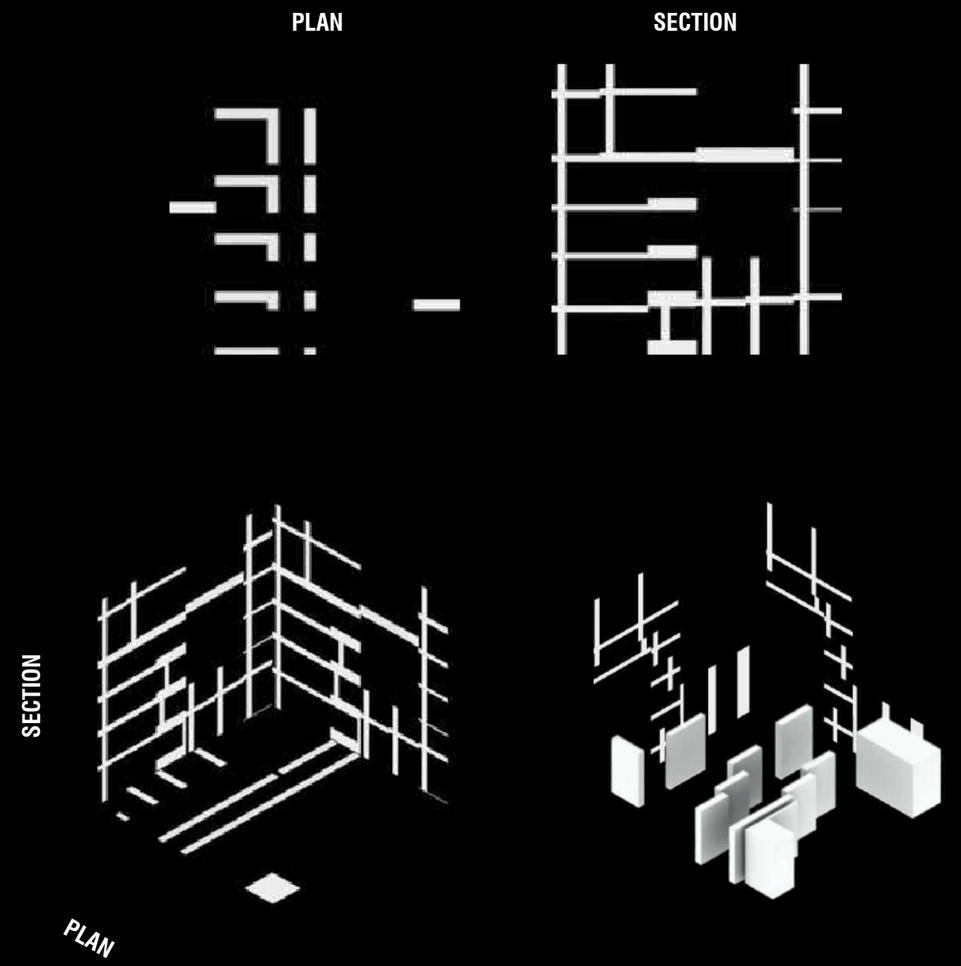
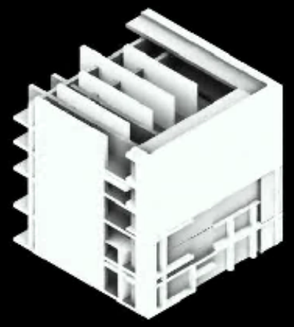
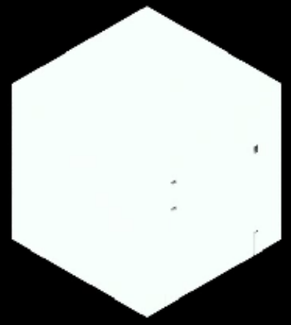


Figure 39. Extruding Poche'
Self. Abstracting the Plan and Section artifacts to extract and extrude poche' to make the *moving object*

POSITIVE



NEGATIVE



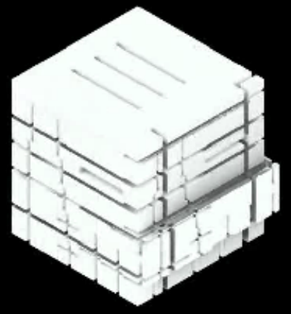
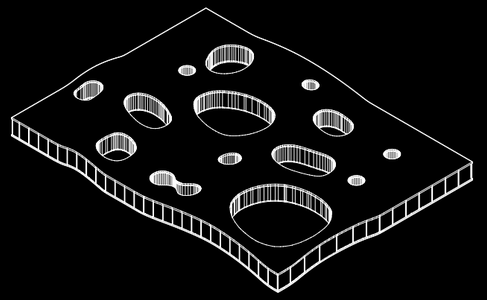


Figure 40. Positive *Moving Object*
Self. Extrusion of the 'white' poche' to generate the *moving object*

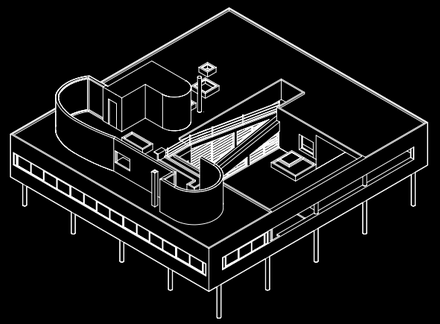
Figure 41. Negative *Moving Object*
Self. Extrusion of the negative 'black' space to generate the *moving object*

As a means of evaluating this representational methodology, the exact same process was used for two different architectural precedents, SANAA's Rolex Learning Center and Le Corbusier's Villa Savoye. Because the Rolex Learning Center or Villa Savoye do not have 'designated' circulation paths given like "The Manhattan Transcripts", we generated our own possible circulation path to start the representational methodology. The process of evaluating this methodology with an additional two different precedents is an important observation in validating that this representational methodology is not only applicable in a wide range of scenarios, but is also a replicable process in generating architectural *object*.

SANAA'S ROLEX LEARNING CENTER

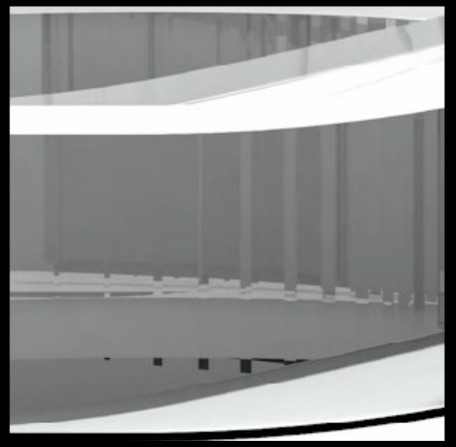


LE CORBUSIER'S VILLA SAVOYE



SANAA'S ROLEX LEARNING CENTER

Figure 42. Rolex Learning Center Circulation Path
Self, Creation of a possible circulation path to replicate the method used in "The Manhattan Transcripts"



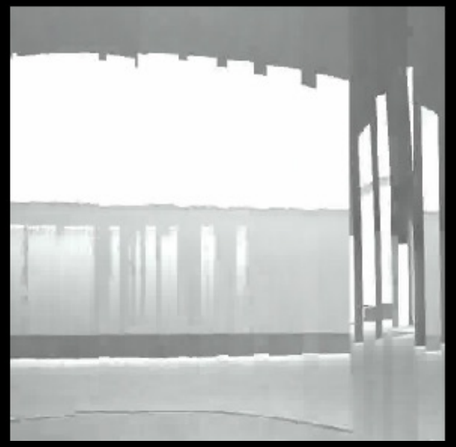


Figure 43. Plan Video
Self. A video in Plan of SANAA's Rolex Learning Center

Figure 44. Section Video
Self. A video in Section of SANAA's Rolex Learning Center

Figure 45. Perspective Video
Self. A video in Perspective of SANAA's Rolex Learning Center

PLAN

SECTION

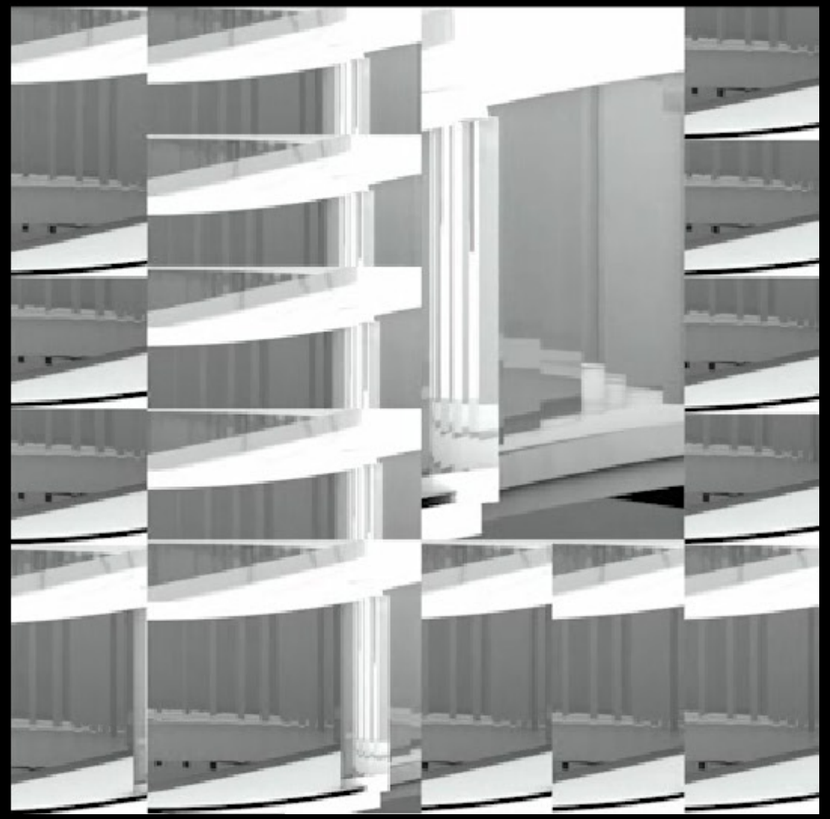


Figure 46. Plan Artifact
Self. A *Moving Image* using the same method as for "The Manhattan Transcripts" artifacts.

Figure 47. Section Artifact
Self. A *Moving Image* using the same method as for "The Manhattan Transcripts" artifacts.

POSITIVE

NEGATIVE

Figure 48. Positive *Moving Object*
Self. Extrusion of the 'white' poche' to generate the *moving object*

Figure 49. Negative *Moving Object*
Self. Extrusion of the negative 'black' space to generate the *moving object*

LE CORBUSIER'S VILLA SAVOYE

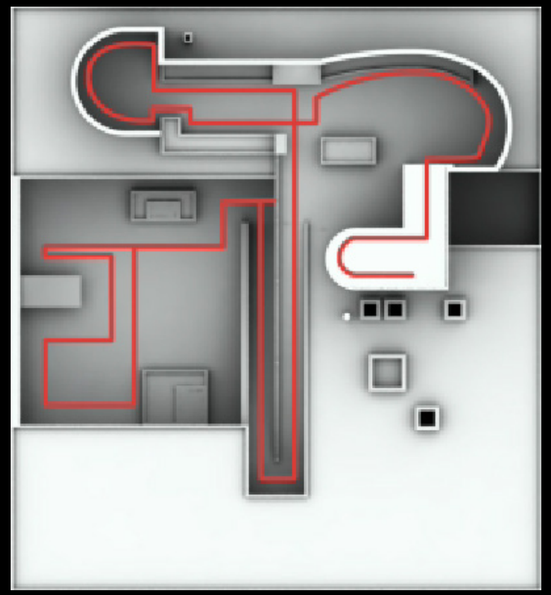
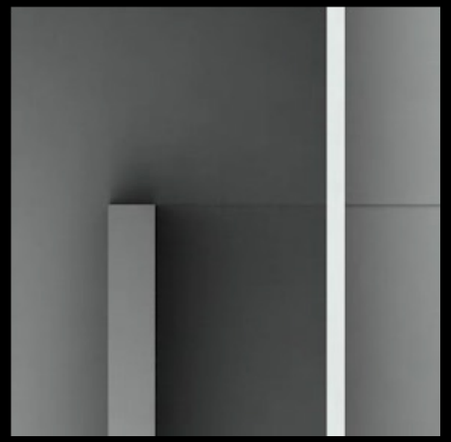


Figure 50. Villa Savoye Circulation Path
Self, Creation of a possible circulation path to replicate the method used in "The Manhattan Transcripts"



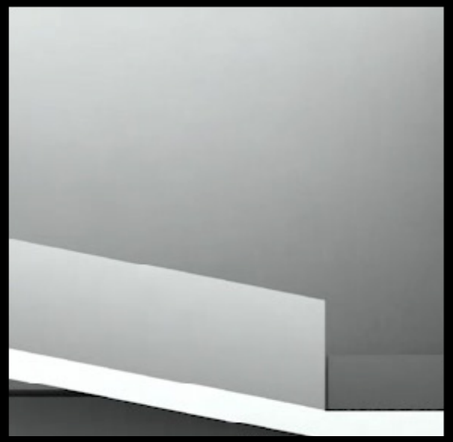
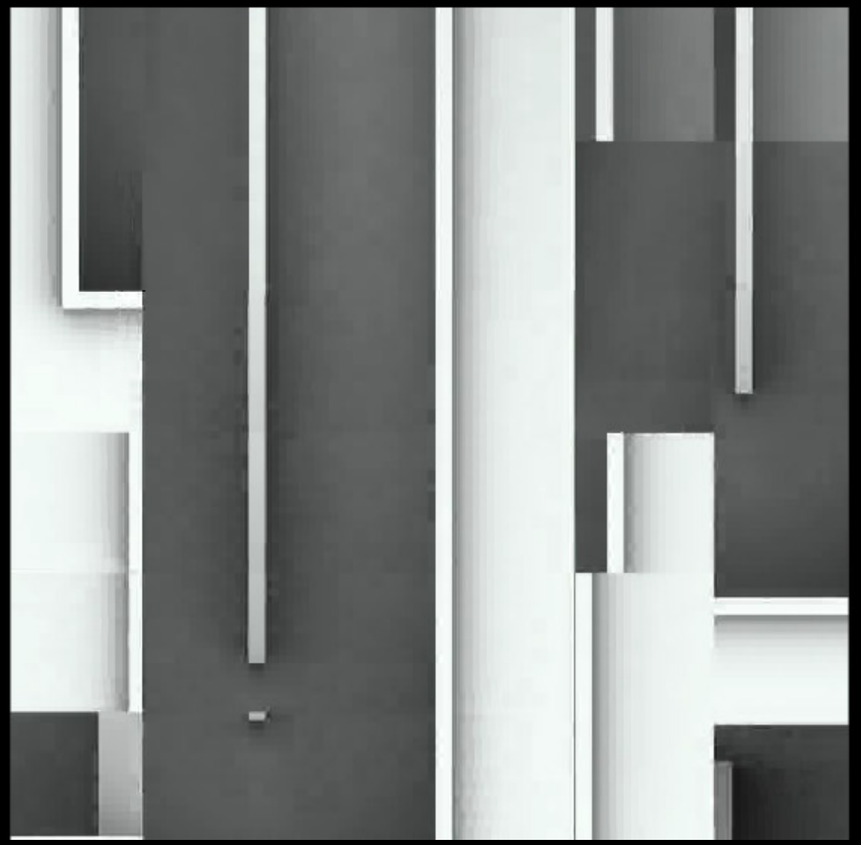


Figure 51. Plan Video
Self. A video in Plan of Le Corbusier's Villa Savoye

Figure 52. Section Video
Self. A video in Section of Le Corbusier's Villa Savoye

Figure 53. Perspective Video
Self. A video in Perspective of Le Corbusier's Villa Savoye

PLAN



SECTION

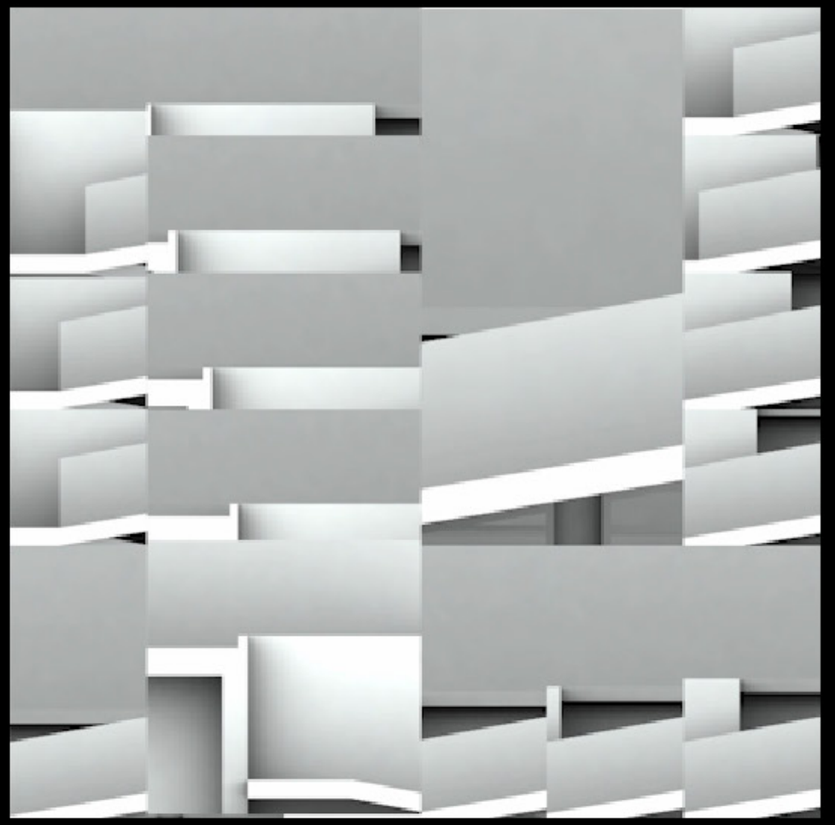


Figure 54. Plan Artifact
Self. A *Moving Image* using the same method as for "The Manhattan Transcripts" artifacts.

Figure 55. Section Artifact
Self. A *Moving Image* using the same method as for "The Manhattan Transcripts" artifacts.

POSITIVE

NEGATIVE

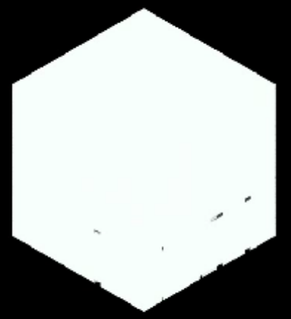


Figure 56. Positive *Moving Object*
Self. Extrusion of the 'white' poche' to generate the *moving object*

Figure 57. Negative *Moving Object*
Self. Extrusion of the negative 'black' space to generate the *moving object*

While the goal of this thesis is a visual representational methodology for the *moving image*, it also aims to achieve the original equation of *object* (*space* + *form*) and *human movement* is architecture. Every artifact and image generated for the *moving objects* is ultimately a culmination of a series of two dimensional images. To fully engage *human movement* and *object,* the representation of the project must be realized into physical three dimensions. By using the *moving object* video, we can extrude an image of the video by black to white levels in a similar manner to how the *moving object* was previously created from a black and white version of the plan and section artifacts (figure 58). Through this extrusion of levels, we are able to create a physical three dimensional *object*. By extracting an *object* from the two dimensional screen into the physically tangible three dimensional world, the *object* inevitably reverts back to its *static* nature, seemingly contradicting this thesis' claim about the copresence of *object* and *movement*. To mediate the removal of *movement*, we use the *moving object* video and project the *movement* of the original video back onto the *object* (figure 59). It is important to note that the extrusion of the *moving object* video is in a single direction, and as a result the projection back onto this *object* is also in a single direction.

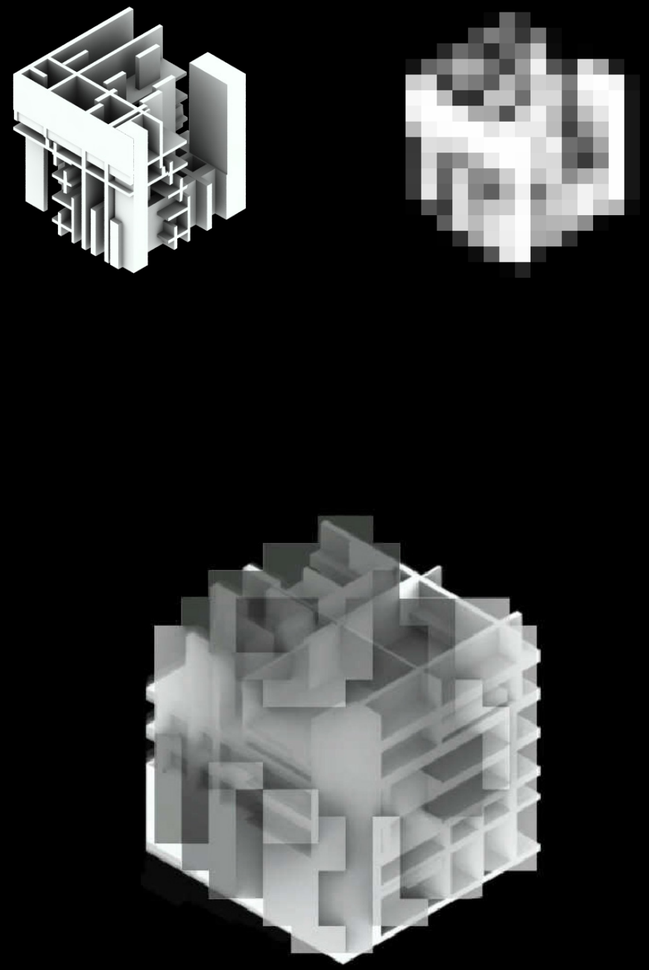
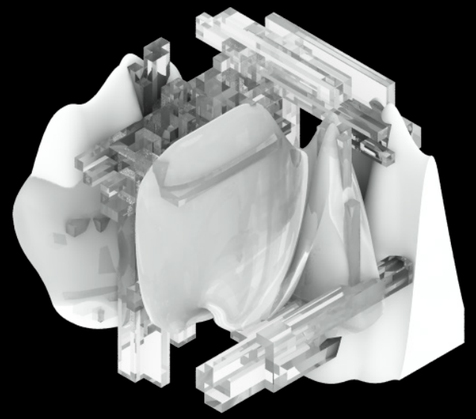


Figure 58. Level Abstraction
Self. Using a single *object* from the *moving object*, the *object* is abstracted to extrude by black and white levels

Figure 59. 2.5D *Object*
Self. Creation of a 2.5D *Object* and using video projection to reapply *movement*

While the resulting *object* now exists in a physically three dimensional space, for the clarity of the thesis, these resulting *objects* will be classified as 2.5D *objects*. We refer to these as two and a half dimensional *objects* because of the single extrusion and projection requiring the *object* to be viewed from a frontal perspective. As a reminder, the *moving object* video is created using three extrusions to create the *object* as a means of roughly replicating the nature in which traditional architecture is created from the plan and section. To then develop the *object* from its 2.5D state into a 3D *object*, we take the poche' of the plan and section artifacts, much like it was used to create the *moving object* video, and create a physical three dimensional *object* that is now able to be viewed from multiple perspectives (figure 60). The use of video projections likewise aims to replicate the *moving object* video and is thus projecting from two directions; from the side of the *object* is projected by the section artifact, while the bottom of the *object* is projected by the plan artifact. What results is an *object* derived from the plan and section, that is then unionized through the *movement* of the overlapping of both plan and section artifacts (figure 61).



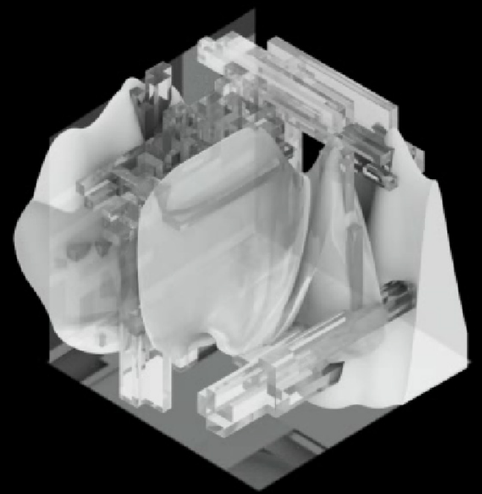


Figure 60. 3D *Object*
Self. Developing from the 2.5D *Object*, the 3D *Object* is created using the plan and section artifacts

Figure 61. 3D *Object* with projection
Self. 3D *Object* is projected with the plan artifact from the bottom and the section artifact from the side.

Object is the coexistence of *space* and *form*, and architecture is the coexistence of *object* and *human movement*; these are the two core beliefs that this thesis rests on. After the culmination of the 3D *object* exploration, this thesis has created *object* and *movement* but has yet to introduce the element of *human interaction*. To achieve this goal, the 3D *object* is scaled up from 1:100 to a 1:1 installation as a means of encapsulating a human inside the experience of the 3D *object* (figure 62). By increasing the size, the installation creates an immersive chamber that is not only able to capture the experience of the 1:100 3D *object* at the human scale, it serves to reintroduce the human perspective introduced originally through the representations of Erwin Panofsky and Auguste Choisy; this brings the thesis full circle and completes the proposed equation that *object* and *human movement* is architecture (figure 63). The installation is not meant to be read as a building, but as the potential experience of applying our representational methodology to architectural design. This installation is as much as what one would call a 'concept model' prior to implementing programmatic design decisions for a conventional architectural building. Much like Bernard Tschumi's Parc de la Villette can be seen as a programmatic implementation of the methodology set by "The Manhattan Transcripts", The *Moving Image* is a framework of architectural design derived through the implementation of *movement* in architectural representation.

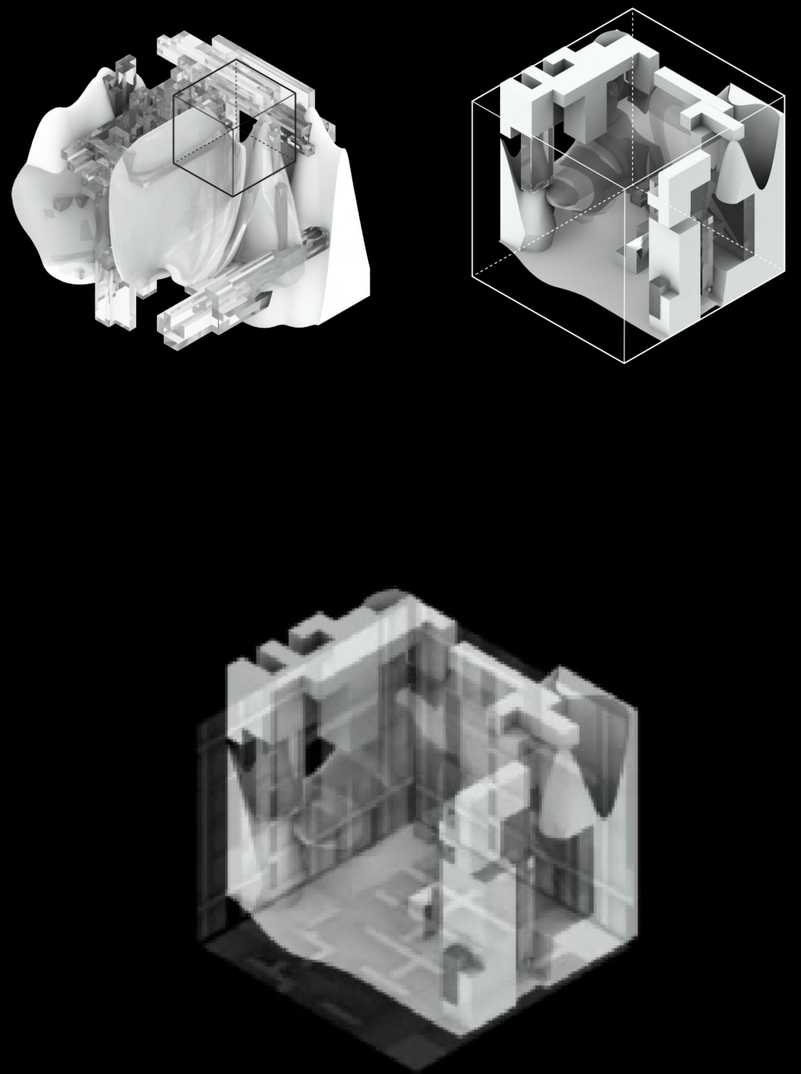


Figure 62. Human Scale Experience
Self. Taking the 1:100 3D *Object* and increasing its size to human scale for a more immersive experience.

Figure 63. 1:1 Installation with *movement*
Self. By making the installation 1:1, we reintroduce the human perspective.

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